

# Personhood & Superstition Part IV (of IV)

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[Presented here is the fourth of four related works. These works are (a) "The Nature of Personhood," (b) "More Implications of Misconstrued Personhood," (c) "Cultural Investment in Superstition," and (d) "Behavioral Engineering to Reduce Superstition." These four pieces are all excerpts from parts of "Person, Life, and Culture," a later chapter of the author's book, *General Behaviorology: The Natural Science of Human Behavior* (Fraley, in press). The relevance of these pieces to managing improvements in ongoing cultural concerns increases their interest to readers of this journal. The four pieces are presented, one at a time, in consecutive issues beginning with the Spring 2006 issue (Volume 9, Number 1).—Ed.]

## Behavioral Engineering to Reduce Superstition

A culture, recast to be relatively free of superstition, would be substantially different from our present culture, requiring a population that was both more educated and differently educated especially with respect to philosophy and science. Its people would have to be schooled explicitly in the qualitative analysis of knowing.

Clearly, much contemporary recourse to superstition is culturally fostered. However, debates about the potential efficacy of superstition often beg the question of whether superstitious behavior is also part of the biological legacy in addition to occurring as a mere artifact of cultural mismanagement. Let us critically review some of the characteristics of superstitious behavior. First, in the absence of objective accounts based on objective evidence and logic, superstitious alternatives often manifest as negatively reinforced escape behaviors. Superstitious explanations, though almost always invalid, are typically convenient. For example, such pseudo-explanations often reduce the social aversiveness of a current situation that is characterized by strong mands for answers. Furthermore, superstitious accounts may deflect the continuing press for a more detailed accounting by conceptually shifting the independent variables into a mystical realm in which logic and objectivity tend not only to be rendered useless but may be regarded as indecorous.

In a superstitious explanation the putative independent variable may, from a natural science perspective, seem to be conspicuously deficient in functional capacity, and more objective people may describe explanatory recourse to such a variable as preposterous. Nevertheless, that kind of account may persist in strength, because, as a behavior of escape from socially and perhaps biologically imposed aversers, it affords great relief. However, given that many such pseudoexplanations would be regarded as absurd when initially presented to most people with contemporary sociocultural conditioning, people require extensive programs of special conditioning to maintain a susceptibility to them. Thus, the kind of relief that such false accounts represent is typically available only to those who continue to undergo the kind of extensive and self-deceptive conditioning that can seemingly rationalize what at first blush is obviously illogical and perhaps foolishly unsophisticated or childish.

In one common class of resort to superstitious accounting, real events are presented in relation to mysterious independent variables that have been custom-conjured to seem as if they complete an accounting for the event of concern. In some cases a fictional variable is posited as a part of the external environment. Consider, for example, this statement: "The pilot of the search plane spotted the tiny and obscure crash site from seven miles away, only because *from on high a compassionate God directed the pilot's gaze precisely in that direction.*" In other cases, the fictional independent variable is cast as a mysterious internal behavior—originating source. For example, "the pilot of the search plane spotted the tiny and obscure crash site from seven miles away, *only because of that pilot's unyielding determination.*" Through scholarly academic pursuit of the former kind of pseudoexplanations one can become a *Doctor of Divinity*, while with scholarly academic pursuit of the latter kind of pseudoexplanation one can become a *Doctor of Psychology*. Both career options are currently available at reputable institutions.

In idealized practice of the kind that is governed by natural science, the absence of a reliable and valid explanation is carefully acknowledged. In a natural science community, respect is garnered by those who resist superstitious explanations and instead conspicuously delineate the problems that have not yet been solved (i.e., the dependent variables for which measurable independent variables have not yet been identified). That they exist *to* be identified is a basic element of the prevailing natural philosophy. According to the rules of citizenship for the natural science community, a scientist who cannot yet account for a detected phenomenon is not to be treated aversively merely because such verbal behavior is not forthcoming, and a good reason exists for avoiding doing so: Our goading a scientist into inventing false accounts as a negatively reinforced escape behavior leaves

us with unreliable if perhaps temporarily satisfying pseudoexplanations.

Within a scientific community the prevailing practice is to reinforce as strongly as possible the proffer of objectively rendered accounts for the phenomenon under examination. Such accounts qualify for reinforcement because, insofar as they feature measurable independent variables and are therefore formal explanations (as opposed to pseudoexplanations), they are at least potentially valid. Reinforcement that is contingent on the intrinsic quality of such a verbal product is in proportion to the degree to which specified changes to the indicated independent variables in such products have, in previous cases, led to predictable effects on the dependent variables of concern. That is, they are the kind of verbal descriptions of relations (a) that on past occasions have reliably supported effective interventions and (b) that can be subjected to practical tests. For those reasons objective accounts have value within scientific communities.

Scientific accounting is a progressive process, but at no stage is any step based on superstitiously informed assumption nor can it involve mystical variables. No matter how tentative a preliminary scientific account may be, it is based logically on objective evidence all variables of which are subject to measurement. A complex phenomenon typically manifests via many functionally related variables that comprise its properties and effects, but at the outset of its investigation, attention may be evoked by only a limited subset of those variables—perhaps by only one of them.

For instance, early in the twentieth century a geographer looking at a relief map of India and the adjacent Himalaya Mountains could have noticed that those mountains appear on the map as if they were wrinkles in the crust of the earth that could have been formed by a collision of India smashing into the Asian continent. Such an observer might then have proposed that continents can and do move, albeit on the basis of very limited but objective evidence.

The limited evidence in such a case would pertain to variables pertinent to but a single kind of effect of the hypothetical phenomenon. Among scientists such a speculation, objectively yet flimsily supported, might be called a *hypothesis*. If it is correct, there will be many other kinds of effects of the posited phenomenon plus its intrinsic variables—all subject to measurement and confirmation. With repeated confirmation the respective relations in which those variables are involved come (in what is fundamentally an economic process) to be called *facts*.

As the number and variety of such measurements increase, and the results continue to comport with the original hypothesis, the proffered explanation begins to be called a *theory*. A theory is an account that is based on

a logical, coherent, and often expanding set of facts, and supports reliable and testable predictions.

Across what is deemed to be a generally sufficient number of confirmations via measures of additional relevant variables, especially direct measurements of the *intrinsic* variables of the central phenomenon, that particular account (i.e., the theory) will come to be regarded as reliable to a correspondingly extreme degree. That particular account may then be reclassified cautiously from *theory* to something with a more absolutistic connotation (e.g., a *fact*: the fact, not theory, of continental drift). However, because that shift in classification is according to arbitrary criteria, natural scientists often continue conservatively to tact a particular account as a *theory* long after others would entertain that kind of shift in the name of its class.

Thus, through the communal practices of reinforcement among natural scientists, those who do the science are kept under contingencies to discover and describe real and relevant variables plus any relations among them. Under that kind of community management the practitioners of science tend to avoid resorting to superstitious shortcuts. They eschew the proffer of fictional “causes” (unreal independent variables) that have been crafted imaginatively and alleged to be endowed with precisely the functional capacity that real but as yet undiscovered independent variables would have to possess to produce observed effects.

In contrast with the social practices that share in defining the integrity of scientific communities, in the culture at large, as it has evolved, people have not been as careful to avoid inflicting aversive stimulation on those who have been without ready explanations for phenomena of common interest. Outside of the natural science community people, and especially leaders, to whom objective accounts for events of common interest fail to occur are much more routinely subjected to aversive treatment, often in the form of ridicule. Those who seem to lack ready explanations typically experience the kind of social treatment that is reserved for dull, uninformed, and uninteresting people. In that kind of social milieu prestige accrues to individuals in proportion to their quick production of seemingly plausible explanations, and respect for people is, in general, proportional to their apparent explanatory repertoire. Recourse to superstition is rendered much more convenient when audiences carelessly fail to distinguish between superstitious explanations and those that delineate functional relations among real (measurable) variables.

Thus, to reduce the general explanatory reliance on superstition within the culture, people should be trained to withhold punishment in the mere absence of explana-

tions, especially with respect to difficult problems.<sup>1</sup> People should be schooled in the nature of explanations per se, and rendered more discriminating with respect to the qualitative features of different classes of explaining. A particular class of appropriate social reinforcement could pertain to the quality of proffered accounts with the reinforcers reserved for the kind of reliable and valid explanations that feature functional relations among measurable variables.

Given pressure to produce an account, the cure for a person's ignorance is not the imposition of aversive stimuli when that person holds silent, a procedure that negatively reinforces the proffering of invalid explanatory contrivances. As typically explained in the invalid terms of purpose and agency, people tend to offer nonsensical explanations to avoid the ridicule and dismissive neglect that are reserved for those who seem not to grasp the intricacies of currently relevant issues.

Instead, science education is the valid and worthwhile intervention, especially the study of science per se (recall that there is a natural science *of* science). Cultural wisdom posits that more comprehensively and appropriately educating people prepares them to offer increasingly reliable and valid explanations. As people often express it in common parlance, "the person with the broader range of integrated knowledge is better prepared to explain things correctly." By shifting the prevailing perspective from the domain of mentalistic superstition to the world of reality, we can restate the previous social lore in more valid terms: First, through natural science studies of a wider variety of phenomena, and then through general education in the methods of natural science per se, especially

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<sup>1</sup> Recall from earlier chapters that, in a correct technical sense, it is not the offending *person* that gets punished in such cases of social miscarry, nor is it the *absence* of behavior that gets punished. Rather, technically, the behavior that actually occurs (in these cases, as an alternative to a valid account) is the object of the punishment. Suppose that a potentially valid (functional) account is not forthcoming, and some alternative behavior occurs instead (e.g., a statement such as "I don't know how or why the event of concern has occurred"). It is that alternative behavior that gets punished if aversive stimulation is subsequently applied. We would measure the effectiveness of that punishment in terms of changes in the frequency of that alternative behavior across subsequent occasions. If the punishment has been effective, the verbalizer may simply remain more quiet, but that precludes access to the positive reinforcers reserved for seemingly knowledgeable behavior. Therefore, the verbalizer may exhibit pseudoexplanations, which, if seemingly valid, both avoid further punishment and are followed by the reinforcing consequences that community members reserve for seemingly valid accounts.

from the behaviorological perspective, people not only come to respond to a wider variety of relevant independent variables, they also become conditioned to describe with greater accuracy the behavior-controlling functional relations the establishment of which is via the interactions of those variables. Explanations that are proffered by people who are better educated in those ways tend to be more comprehensive both with respect to what is studied and to how it is studied.

The greater capacity of natural explanations for practical effectiveness leaves alternative superstitious accounts subject to relatively less nonsocial reinforcement. That is, superstitious accounting for events leaves people with no practical indication of how to control or how to improve the existing control that is exerted by those events. Thus, people are unable to produce more effective and hence more reinforcing outcomes on the basis of superstitious accounts. Functional accounts, on the other hand, indicate the variables upon which to focus interventions that will yield more practical reinforcing effects. However, people may continue to behave only intuitively in a practical situation and thereby produce intrinsic natural reinforcing consequences while at the same time misdescribing the actual functional relations in terms of irrelevant superstitious nonsense. In that case no verbally mediated improvement occurs in the control of those peoples' ongoing practical behavior (i.e., any improvement must rely exclusively on the consequences of the behavior rather than on verbal supplements to its antecedent controls). On the other hand, when people objectively produce valid functional accounts of what is occurring, that verbal behavior can share in the antecedent control of their ongoing practical behavior in ways that do enhance its effectiveness.

We may note that, with more education in the natural sciences, a person's explanations of events become less superstitious, a trend driven by the greater practical effectiveness of the outcomes to which those valid explanations contribute. That is, natural accounts tend to be more effective and hence ultimately more reinforced in natural ways. In such cases, problem solving through reliance on contrived pseudoexplanations tends to extinguish under a natural process of differential reinforcement, which selectively increases the more effective kind of accounts. Practical effectiveness increases through the manipulation of the relevant independent variables, and it is precisely those variables that are specified in valid accounts. That is why people often tend to be less superstitious in their analyses of phenomena that are critical to their survival or even to their general well-being. As it is commonly said, if it is of critical important that people get things right, they cannot afford to behave superstitiously.

Let us look more closely at practical personal effectiveness. Practical personal effectiveness tends to con-

note contact with the intrinsic natural reinforcers of one's behavior, and that contact may be improved when one more effectively manipulates the relevant independent variables under stimulus controls that are being supplemented by valid verbal accounts of the relevant functions. The phrase "being able to describe how best to do things" alludes to the verbal behavior that shares in the control of the manipulative or contriving behavior by which one's contact with critical variables is enhanced or important outcomes are produced.

At the same time, if those valid verbal accounts are publicized, other people may be providing social consequences of those publicized functional explanations. Those social consequences may either reinforce or punish those accounts, depending on the social practices of the community. Members of a natural science community will tend to reinforce accounts that feature two real variables and the functional relation between them, and so may members of the general community at large. But if the general community at large is indoctrinated with superstitious assumptions about the phenomena of concern or about the nature of human beings and their behavior with respect to those phenomena, then valid functional accounts, when publicized, may be subject to suppressive social punishment.

As a result, those punished accounts may be publicly suppressed but remain extant in private, in which case, they can continue to contribute to the improvement of the person's practical behavior. On the other hand, those valid functional accounts, when socially punished, instead of continuing in private may come to be supplanted by superstitious alternatives (in which case the person is said to have started *believing* those superstitious alternatives to the valid explanations). Natural scientists who have been fated to live in the midst of heavily superstitious cultures have in some cases continued their naturally reinforcing scientific work while its public presentations undergo a social punishment-driven suppression.

Practical effectiveness aside, if invalid superstitious accounts, when proffered, are reinforced socially with sufficient strength, the social reinforcers may exert more functional control over the superstitious accounting behavior than the effective practical outcomes exert on the alternative practical behavior that may follow from more valid accounts. Some degree of practical effectiveness with the matters at hand is thus sacrificed in favor of the enhanced social status that remains contingent on what may become ostentatious displays of superstition. That is a somewhat common occurrence, and examples may be noted when a community becomes well organized around an invalid ideology. A community member's conformance to the superstitious ideological foundations of such a community may then yield social reinforcers that are stronger than the natural reinforcers that could be

contacted through the production of better outcomes in the practical work that is being performed.

For example, the work of many classroom teachers remains informed by mistaken notions about the nature of behavior and how it can be changed most effectively. Although the practical outcomes of their misguided teaching, as manifesting in the behavior of their students, remain limited and of reduced reinforcing effect in the practical arena, those teachers, in many cases, tend not to adopt more effective alternative practices. The social reinforcers of their misguided practices that are supplied from their ideologically informed professional community are sufficiently strong to prolong the maintenance of their faulty approach. That is, the community that trains them in that faulty approach continues to supply the reinforcers that maintain their faulty practices. In common terms, such practitioners proceed happily with the comfortable knowledge that they are on the right track even though an objective review of their results would suggest otherwise.

Cultural analysts have long noted that as scientific explanations are advanced, superstitious accounts retreat. The organized natural science subcommunity has played a major role in promoting that kind of progress. However, other comparably well organized subcommunities maintain their integrity through recourse to superstition and therefore defend their investment in that approach, although in doing so they are seldom explicit about the superstitious nature of their foundations, which they tend to describe euphemistically. Arguably such subcommunities remain extant, because the culture at large has made too little progress with the comparative qualitative analysis of different ways of knowing.

Mere demonstrations that a more functional kind of accounting leads to more effective outcomes, no matter how compelling, often prove insufficient to make important headway toward a more intellectual culture. The scientific community often tends to present its products while de-emphasizing its methods and perhaps more so its philosophy. According to that prevailing social theory, the value of those products will instill respect for science, while science per se, including its natural philosophy, is still not generally understood. That approach may leave people respecting "science" but unprepared to comprehend what they are respecting. Thus, they may admire their "scientific" culture and relish the improved quality of life that it affords while attacking as intrinsically evil the tenets of naturalistic philosophy upon which science is established.

With respect to any phenomenon of concern, scientific practitioners work to account for that phenomenon by discovering the relevant measurable variables as well as the functional relations among those variables. Absent apparent independent variables, scientists assume that real ones exist to be discovered, and they tend to persist

until they find them. In that way scientists trace the functional history of the current events that define the phenomenon of concern. Ultimately, through that analytical procedure, those scientists become able to intervene among what will become the functional antecedent variables that control future events. Thus, scientists gain constructive control of future manifestations of the phenomenon of concern. Improvements in the control of that phenomenon may have practical implications of great importance to people far beyond the scientific community. Everyone, not just scientists, may benefit. Yet absent explicit instruction in the field of qualitative knowing, people in general tend not to appreciate why functional accounting should hold the promise of such an advantage over other highly touted kinds of accounting, especially the kinds that feature relations that lack an objective basis and must be maintained superstitiously.

Even people whose work serves as a paradigm for natural science can become careless in their general defense of the scientific approach beyond their own specialization. Arguably, superstition has no valid role in the methods of investigation that occur under contingencies to produce practical outcomes. Natural scientists generally tend to regard those who share their particular specialization as an unsuperstitious lot, especially with respect to their respective scientific activities. Furthermore, within a subcommunity of natural scientists who engage in a given specialization, superstitious accounts pertinent to events in that specialization earn disrespect and tend to be punished in ways apropos of bad citizenship.

However, for some people the contingencies that share in reducing the superstitious behavior when they work as natural scientists may have little effect on their superstitious behavior with respect to equally natural phenomena that lie beyond the scope of their own scientific specializations. For example, consider a corporate-employed chemist who spends a career in the laboratory developing a family of organic compounds that exhibit a special set of commercially important properties. When confronting a class of natural phenomena that differs substantially from the chemical events with which that person is scientifically familiar—for instance, the origin of the earth—that chemist may entertain somewhat primitive and simplistic superstitions, perhaps by insisting irrationally that the world was created rather abruptly in the remote fringe of the human historical record by the miraculous intervention of a powerful deity.

Geologists or cosmologists, on the other hand, could not afford the implications of such an unwarranted assumption. Within a geological or cosmological community any exhibition of that particular superstitious idea would be subject to extinction. In addition, it would probably be subject to social punishment. However, a geologist or cosmologist may openly assume that organic

bodies miraculously initiate in some creative spontaneous way at least some of the behavior that they exhibit. Such an assumption, if publicized in that subcommunity, may not be subject to reduction via aversive consequences.

Our analysis of the inconsistencies in the scientific perspective of individuals from across the natural science community in general must shift to the philosophical level of consideration. Natural philosophy informs the scientific work of natural scientists in the functional sense of imposing a kind of intellectual quality control on their work and its products. However, not all of those who pass as natural scientists have been conditioned to extrapolate that kind of quality control to problem solving *beyond the bounds of their own scientific specializations*. To observers of the broader range of their behavior, they seem intellectually inconsistent.

Perhaps because of gaps in their training, they may never have attained the abstraction of describing verbally to themselves what is called the general *philosophy of natural science* nor been led to consider explicitly the functional role of such philosophy in relation to scientific activity in general. Their philosophical behavior, to the extent that it can be identified, may occur more intuitively than explicitly. Their scientific work may be largely rule-governed, proceeding mostly according to prescribed method. Arguably, such people work more as rule-governed technicians than as philosophically informed scientists.

Furthermore, such practitioners may never have declared publicly that naturalism is their personal philosophy in general, which would have facilitated the science community's provision of more precise social consequences with respect to their intellectual consistency. They may never have analyzed the real or potential functional relations between the verbal manifestations of natural philosophy and the broad ranging remainder of their behavior. While the style of their own professional work may comport intuitively with a natural philosophy as a result of the contingencies and prescribed work habits that prevail in their own workplaces, they may remain largely unacquainted with natural philosophy in an explicit verbal way, which hinders its generalizations. Thus, they may fail to render naturalistic interpretations of the scientific activities and results from other fields in which natural scientists are at work. That is, the quality-controlling effects of natural philosophy do not come readily to bear on the many facets of their behavior that lie beyond the scope of their somewhat narrow professional specializations, including, in some cases, the methods and products of natural scientists who work in other fields.

When in situations outside of their own relatively narrow scientific purview, where the prevailing natural contingencies that support scientific purity are less stringently imposed than in their own specialization, they may behave uncritically in blatantly superstitious ways. Joining

with others who do so, whether defensively or to proselytize, such narrowed scientists may formally or informally organize sociopolitically to impose on others a respect for their superstitious conduct and its implications. Such activity may even be directed at natural scientists who work in other fields, and that superstition-based meddling may inhibit the scientific work in those fields.<sup>2</sup>

Implicit in such inconsistent activity on the part of some scientists is the need for all natural scientists to be well trained, not merely in the methodology of their own specializations, but especially in the nature of natural science per se. The subject matter of that training must include the functional role that is played in general by philosophical assumptions and then, in particular, by those of scientific naturalism. Trainees in any science specialty must be prepared to describe explicitly the functional role of the philosophy by which their work is quality-controlled and to exhibit the generalization of those qualitative principles, which characterize the natural scientific perspective, to all natural science fields. That is essential to the integrity of the broadly construed natural science community.

The behavior of both mystics and natural scientists is informed by philosophical assumptions, but as revealed across the course of the book [Fraley, L.E. *General Behaviorology: The Natural Science of Human Behavior*.—Ed.], the quality of an assumption is a function of its kind of origination. Therefore, students in any natural science would be well served by describing accurately how the philosophical assumptions of naturalism have been derived inferentially from the results of general objective practice in the first place. Scientists in training must become prepared to contrast that kind of derivation with the ways in which the superstitious alternatives have arisen. Philosophy does not manifest spontaneously. It has a history, and how a particular set of philosophical assumptions has arisen has much to do with the quality of the intellectuality that those assumptions can support.

If the general objective of scientific training is to reach beyond the methods of a particular specialization and produce a comprehensive natural scientist, one who may practice within a specialization but who also appreciates natural science in general, then the training must reflect that broader goal. Such training should begin with the nature of science in relation to its alternatives, the nature of the philosophy of naturalism in relation to its alternatives, and the general nature of the functional relation between the philosophical and scientific repertoires. Students should be able to describe the qualitative differences among different kinds of knowing in terms of both origins and implications. As a result of having been trained to that extent, a person's place in the class of natural scientists should primarily connote a high quality of intellectuality that pertains to, but also transcends, activity in the person's specialization. Under that training approach a trainee preparing for a career in a natural science field would also become a connoisseur of good science in general, and that characteristic would be utmost among discriminative qualifications for full citizenship in the natural science community.

## References

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 Skinner, B.F. (1953). *Science and Human Behavior*. New York: The Free Press.☞☛

<sup>2</sup> For example, a person who works as a meteorologist or as a geophysicist may join a coalition that is mounting a political campaign to stop embryonic stem cell research on the grounds that such scientific programs destroy worthwhile lives. Perhaps that science-employed individual has become convinced that, because some people are good, it is good to produce as many people as possible, and therefore embryos should not be diverted for other purposes. Or perhaps it is assumed that even such an inchoate human body is sacred because it has already been possessed (or is soon to be possessed) by a soul dispatched by God to take up the stewardship of that body. Stem cell research may be curtailed when natural scientists who pursue that line of work are subsequently criminalized.